

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A non-destructive evaluation system for testing wood products, comprising:

a first integrally formed handheld measuring probe having a body that includes a shaft defining a first impact surface, a spike fixedly coupled to one end of the shaft, a transducer in contact with the spike for detecting a stress wave imparted thereto and outputting a signal indicating the presence of a stress wave, and a handle slideably coupled to the shaft;

a second integrally formed handheld measuring probe having a body that includes a shaft, a spike fixedly coupled to the shaft, a transducer in contact with the spike for detecting a stress wave and outputting a signal indicating the presence of a stress wave, and a handle slideably coupled to the shaft; and

an electronic unit including a timing device, the electronic unit coupled in electrical communication with the transducer of the first measuring probe and the transducer of the second measuring probe for receiving the outputted signals therefrom;

wherein the electronic unit determines the travel time of the stress wave from the transducer of the first probe to the transducer of the second probe.

2. The system of Claim 1, wherein the impact surface of the first probe is formed at the end of the first probe shaft.

3. The system of Claim 2, wherein the first probe shaft includes a retaining flange disposed at the end of the shaft, the retaining flange having a projection extending in a direction opposite the shaft, the projection forming the impact surface.

4. The system of Claim 3, wherein the projection extends substantially parallel to the longitudinal axis of the shaft.

5. The system of Claim 2, wherein the first probe impact surface is substantially orthogonal to the longitudinal axis of the shaft.

6. The system of Claim 5, wherein the first measuring probe further includes a first contact surface disposed adjacent the impact surface and facing the spike end of the first measuring probe and a second contact surface located at the interface between the shaft and the spike, the first and second contact surfaces slideably retaining the first probe handle therebetween.

7. The system of Claim 6, wherein the first or second contact surface is substantially orthogonal to the longitudinal axis of the shaft.

8. The system of Claim 6, further including spacers disposed on the opposite sides of the first probe handle, the contact surfaces formed by the spacers.

9. A portable measuring probe comprising:  
a body including a shaft, a spike fixedly coupled to one end of the shaft, a transducer in contact with the spike for detecting a stress wave imparted thereto and outputting a signal indicating the presence of a stress wave, and a handle slideably coupled to the shaft.

10. The probe of Claim 10, wherein the shaft defines a first impact surface, the impact surface of the probe being formed at the end of the shaft.

11. The probe of Claim 10, wherein the shaft includes a retaining flange disposed at the end of the shaft, the retaining flange having a projection extending in a direction opposite the shaft, the projection forming the impact surface.

12. The probe of Claim 11, wherein the probe further includes a first contact surface disposed adjacent the impact surface and facing the spike of the probe and a second contact surface located at the interface between the shaft and the spike, the first and second contact surfaces slideably retaining the handle therebetween.

13. A method of testing the stiffness in wood products using a system having a first measuring probe, a second measuring probe, and an electronic unit, each probe having a spike, a shaft rigidly coupled to the spike, first and second contact surfaces at the proximal and distal ends of the shaft, a handle slideable coupled to the shaft between the

first and second contact surfaces, and a transducer connected in electrical communication with the electronic unit, the method comprising:

inserting the spike of the first measuring probe into the wood product;

driving the spike further into the wood product by sliding the handle in the direction of the spike and impacting the first contact surface;

inserting the spike of the second probe into the wood product a spaced distance from the first probe;

driving the spike of the second probe further into the wood product by sliding the second probe handle in the direction of the second probe spike and impacting the first contact surface of the second probe;

generating a stress wave at the first probe;

determining the time taken by the stress wave to travel from the first probe to the second probe.

14. The method of Claim 13, wherein the second probe is inserted a known distance from the first probe.

15. The method of Claim 13, further including measuring a known distance from the first probe prior to inserting the second probe.

16. The method of Claim 13, further including removing the first probe by sliding the first probe handle in the direction opposite the first probe spike and impacting the second contact surface of the first probe.

17. The method of Claim 13, further including removing the second probe by sliding the second probe handle in the direction opposite the second probe spike and impacting the second contact surface of the second probe.

18. The method of Claim 13, further including inserting the first and second probes at an angle of approximately 30-45 degrees from the longitudinal axis of the wood grain of the wood product.

19. The method of Claim 13, wherein generating a stress wave includes impacting an impact surface formed by the shaft of the first probe.

20. The method of Claim 19, wherein impacting the impact surface of the first probe includes

impacting the impact surface of the first probe with an impact tool having a striking surface area, wherein the striking surface area is greater than or equal to twice the area of the impact surface.